

## Wired Vs Wireless Networking

Computer networks for the home and small business can be built using either wired or wireless technology. Both wired and wireless can claim advantages over the other that can be compared in five key areas such as installation methods, cost, reliable, performance and security. (Introduction)

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~~You've studied the analysis and are ready to make your decision,~~ which is better wired or wireless? If you are very cost-conscious, need maximum performance of your home system, and don't care much about mobility, then a wired Ethernet LAN is probably right for you. <sup>o.k</sup> If on the other hand, cost is less of an issue, you like being an early adopter of leading-edge technologies, and you are really concerned about the task of wiring your home or small business with Ethernet cable, then you should certainly consider a wireless LAN. (Conclusion)

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Ethernet cables must be run from each computer to another computer or to the central device. It can be time-consuming and difficult to run cables under the floor or through walls, especially when computers sit in different rooms. The correct cabling configuration for a wired LAN varies depending on the mix of devices, the type of Internet connection, and whether internal or external modems are used. If <sup>a</sup> user prefers <sup>the r</sup> want to use Wi-Fi technology it can be configured in two different ways. First type of Wi-Fi installation is "Ad hoc" mode that allows wireless devices to communicate in peer-to-peer mode <sup>or</sup> with each other and the other type of installation is "Infrastructure" mode, <sup>which</sup> allows wireless devices to communicate with a central node that in turn can communicate with wired nodes on that LAN. Most LAN require infrastructure mode to access the Internet, a local printer, or other wired services, whereas ad hoc mode supports only basic file sharing between wireless devices. Both Wi-Fi modes require wireless network adapters, sometimes called WLAN cards. Infrastructure mode WLAN additionally require a central device called the access point. The access point must be installed in a central location where wireless radio signals can reach it with minimal interference. Although Wi-Fi signals typically reach 100 feet (30 m) or more, obstructions like walls can greatly reduce their range. (Installations)

Ethernet cables, hubs and switches are very inexpensive. Some connection sharing software packages, like ICS, are free; some cost a nominal fee. Broadband routers cost more, but these are optional components of a wired LAN, and their higher cost is offset by the benefit of easier installation and built-in security features. For

wireless gear costs somewhat more than the equivalent wired Ethernet products. At full retail prices, wireless adapters and access points may cost three or four times as much as <sup>e</sup>Ethernet cable adapters and hubs/switches<sup>s</sup> respectively. 802.11b products have dropped in price considerably with the release of 802.11g, and obviously, bargain sales can be found if shoppers are persistent. (Cost)

Ethernet cables, hubs and switches are extremely reliable, mainly because manufacturers have been continually improving Ethernet technology over several decades. Loose cables <sup>are</sup> likely <sup>to</sup> remain the single most common and annoying source of failure in a wired network. When installing a wired LAN or moving any of the components later, be sure to carefully check the cable connections. Broadband routers have also suffered from some reliability problems in the past. Unlike other Ethernet gear, these products are relatively new <sup>and have</sup> multifunction devices. Broadband routers have matured over the past several years and their reliability has improved greatly. Wireless LAN suffer a few more reliability problems than wired LAN. The 802.11b and 802.11g is wireless signals are subject to interference from other home device or appliances wave. Wireless networking products, particularly those that implement 802.11g, are comparatively new. As with any new technology, expect it will take time for these products to mature. (Reliability)

Wired LANs Ethernet connections can support up to 1000 Mbps bandwidth that represents a theoretical maximum performance never really achieved in practice, Fast Ethernet should be sufficient for home file sharing, gaming, and high-speed Internet access. Wired LANs usually using Ethernet switch if more than one computer connect to the network. Therefore, Wireless LANs using 802.11a/g/n support a maximum

theoretical bandwidth of 300 Mbps. Furthermore, Wi-Fi performance is distance sensitive, meaning that maximum performance will degrade on computers farther away from the access point or other communication endpoint. As more wireless devices utilize the WLAN more heavily, performance degrades even further. Overall, the performance of 802.11a and 802.11g is sufficient for home Internet connection sharing and file sharing, but generally not sufficient for home LAN gaming. (Performance)

Firewalls system hardware are the primary security consideration for Wired LAN, this hardware can be configured to prevent external hackers or intruders. Therefore Wireless LAN is using Wired Equivalent Privacy (WEP/WEPA) encryption standard that protect their data and makes wireless communications reasonably safe. In theory, wireless LANs are less secure than Wired LANs, because wireless communication signals travel through the air and can easily be intercepted. (Security)

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